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strong plea for a botany broad enough to take in the plant under cultivation, and for a horticulture scientific enough to demand and use the laws and facts of scientific botany.—The Flora of the Yellowstone National Park, by Frank Tweedy, is a neat pamphlet of seventy-eight pages, enumerating 657 species of Phanerogams and Pteridophytes found growing in the park. The main list is preceded by special lists of the forest trees, alpine flora, bog flora, flora of the hot springs and geysers, the grasses, etc.—A new edition of the London Catalogue of British Plants is noticed by the English botanical journals. It is edited by Frederick J. Hanbury, and is published by Bell & Son, of London.—The editor of *Grevillea* (146 Junction road, London, N., England) offers for sale a number of botanical books of some rarity, together with others not so rare, but quite as desirable; also, several valuable exsiccati.—Douglas H. Campbell published in the June Bulletin of the Torrey Botanical Club a neatly-made-out list of the plants of the Detroit river. It is surprisingly large.—The *Journal of Mycology* for June continues the synopsis of the North American Hypocreaceæ, by Messrs. Ellis and Everhart.—The editor of this department would again ask collectors to remember his request for specimens of *Cuscutæ* in flower and fruit. Dense flowering forms of each species are particularly desired.

ENTOMOLOGY.

HUBBARD'S INSECTS AFFECTING THE ORANGE.¹—This elaborate report does great credit, not only to the author but to the U. S. Entomologist, who has projected the series of special reports of which this forms the most important. Mr. Hubbard's work was confined to Florida, and his report is thoroughly practical and forms a hand-book adapted for those whose knowledge of entomology is but slight.

A host of insects prey upon the orange, and of those directly injurious the list is a long one. In the winter little injury is experienced, but in February most of those kinds injurious to the orange make their appearance, and in May and June attain their greatest activity.

To the entomologist the portions of this report most interesting is the account of the rust mite, *Typhlodromus oleivorus* Ashm., of *Papilio cresphontes*, *Lagoa opercularis*, the account of the different species of bag-worms, or *Æceti*; the different beetles boring in the wood and bark; the parts concerning the two species of *Psocus*, whose habits are described; also the notices and illustrations of other species, both destructive and beneficial.

¹ U. S. Department of Agriculture. Division of Entomology. Insects affecting the orange. Report on the insects affecting the culture of the orange and other plants of the citrus family, with practical suggestions for their control or extermination, made, under direction of the entomologist, by H. G. Hubbard, with fourteen plates and numerous wood cuts. Washington, 1885. 8 vo, pp. 218.

The illustrations are for the most part very good, while the chromo-lithographs, from sketches by Mr. F. D. Owen, are most excellent. The report will be most serviceable to orange-growers, and also contains many new observations of special interest to entomologists.

STRIDULATING AND SENSE-ORGANS IN DIPLOPOD MYRIOPODA.—Mr. G. C. Bourne describes several points in the anatomy of *Sphærotherium*, which have been overlooked by previous writers. The genus differs from *Glomeris* in the position of the antennæ in a deep fossa. Corresponding to each of the twenty-one pairs of legs is a pair of "tracheal plates" placed between the attachments of the appendages. The first three pairs belong to as many segments, while of the remainder, like the legs, two pairs belong to each segment; there is also a nerve-ganglion to each segment. In the male there are three extra pairs of appendages, copulatory in function; two pairs of these bear stridulating organs which have not been previously noticed in this genus; besides the chitinous ridges on these appendages, there are similar ridges on the inner surface of the large terminal tergite.

The tracheal system differs from that of most other Diplopods in having very well developed branching tracheæ. Each tracheal plate carries a stigma, which opens into a "tracheal sac." From this sac two main tracheal trunks pass out, each of which breaks up into a number of smaller branches. The author considers the tracheal sacs homologous with those of *Peripatus*, from which form these branching tracheæ are derived.

The antennary sense-organs are conspicuous. An error is pointed out in the description of their histology by Bütschli, who mistook certain cells, in the connective tissue surrounding the nerve bundles, for ganglion-cells. An auditory organ is presupposed by the existence of a stridulating organ. The cavity opening to the exterior by a small pore below the eyes is regarded as such an organ; it is lined by a sensory epithelium, supplied by the nerve-fibers from the cerebral ganglion.—*Fourn. Roy. Micr. Soc.*, April, 1886.

ENTOMOLOGICAL NEWS.—It was reported at a conference organized by the Zemstvos of nearly all the southern provinces of Russia, that almost all the southern districts suffer greatly from the Hessian fly.—At a meeting of the Linnean Society of New South Wales, held March 31, Mr. A. S. Olliff described a new aphanipterous insect from New South Wales, under the name of *Echidnophaga ambulans*. It was found in large numbers on the head and breast of a porcupine ant-eater *Echidna hystrix*. It differs from the *Pulex echidnæ* of Denny, from the same host, in habit as well as in several important points of structure, and is therefore referred to a new genus. Unlike other fleas, this species does not appear to possess the power of leaping.—Mr.

O. W. Oestlund publishes, in the Fourteenth Annual Report of the Geological and Natural History Survey of Minnesota, a list of the Aphididæ of that State, with descriptions of a number of new species.—The Entomological Society of Washington have issued, in a pamphlet of thirty-two pages, the first number of its Proceedings, which contains some interesting notes.

ZOOLOGY.

GEOGRAPHICAL DISTRIBUTION OF PELAGIC MARINE ANIMALS.—Herr C. Chur (*Zool. Anzeiger*, p. 35) ascribes the wide distribution of pelagic forms to four causes; they are of great geological age, and existed long before the elevation of the continents, while the appearance of the latter has given rise to currents which are of great significance in distribution; they are provided with powerful locomotor organs; they or their germs may become attached to powerful swimmers, wood, or the feet of swimming birds; and lastly, they are aided by the wind, for when floating on the water they offer a broad surface.

The author then proceeds to discuss the results of recent observations which confirm the idea just enunciated; as examples of geologically old forms, we may take the Protozoa, and especially the Foraminifera, several of which have been found by Brady to be cosmopolitan in their distribution; the Cetacea and perhaps some Cephalopods are good examples of strongly swimming forms; the cosmopolitanism of many pelagic Crustacea and the localization of Cœlenterata are explained by the resistant chitinous shell of the one, and the delicacy of the tissues of the other set of forms; at the same time, some cœlenterate species are very widely distributed.

INFLUENCE OF HIGH PRESSURES ON ANIMAL TISSUES.—M. P. Regnard has investigated the increase of weight in organs and tissues subjected to high pressures (100–400 atmospheres), and he finds a great increase in the quantity of water in the tissues. It is not yet certain whether this is due to water directly entering, or whether it combines with the albuminoids, and, after the removal of the pressure, escapes and infiltrates the tissues.—*Journ. Roy. Micr. Soc.*, June, 1886.

SHELL FORMATION IN BIVALVE MOLLUSKS.—Dr. F. Müller describes the mode of shell formation in Lamellibranchiata. His investigations relate chiefly to Anodonta, Unio and Cyclas, of which chipped-off edges and sections were studied. The decalcification was effected by means of dilute chromic acid; picrocarmine was used for staining, and celloidin was found to be the only satisfactory imbedding material.

The general result of Dr. Müller's research is to corroborate Mathusius in his account of the shell-growth by intussusception and not by secretion. He does not, however, exclude the possi-